

	EXPRESSION	MATHEMATICA SYNTAX
BASICS	$3 + 4x$	<code>3 + 4x</code>
	$5 - 27$	<code>5 - 27</code>
	$12x$	<code>12x</code> or <code>12 x</code> or <code>12 * x</code>
	xy	<code>x y</code> (don't forget the space)
	$\frac{x}{y}$	<code>x/y</code> (or use Basic Math Assistant palette) (or type <code>[CTRL]+/</code> to get $\frac{\square}{\square}$)
	e	<code>E</code> (or use Basic Math Assistant)
	π	<code>Pi</code> (or use Basic Math Assistant)
	∞	<code>Infinity</code> (or use Basic Math Assistant) (or type <code>[Esc] inf [Esc]</code>)
	$\sqrt{32}$	<code>Sqrt[32]</code> (or use Basic Math Assistant) (or type <code>[CTRL]+2</code> for the $\sqrt{\quad}$ sign)
	$\sqrt[4]{40}$	<code>40^(1/4)</code> (or use Basic Math Assistant)
	$ x - 3 $	<code>Abs[x-3]</code>
	$30!$ (factorial)	<code>30!</code>
TRIG	$\sin \pi$	<code>Sin[Pi]</code>
	$\cos(x(y + 1))$	<code>Cos[x(y+1)]</code>
	$\cos 60^\circ$	<code>Cos[60 Degree]</code> (or use Basic Math Assistant)
	$\cot\left(\frac{2\pi}{3} + \frac{3\pi}{4}\right)$	<code>Cot[2 Pi/3 + 3 Pi/4]</code>
	$\arctan 1$	<code>ArcTan[1]</code>
EXPS / LOGS	$\ln 3$	<code>Log[3]</code>
	$\log_6 63$	<code>Log[6,63]</code>
	$\log 18$	<code>Log10[18]</code> or <code>Log[10, 18]</code>
	2^{7y}	<code>2^(7y)</code> (or use Basic Math Assistant) (or type <code>[CTRL]+6</code> to get \square^\square)
	e^{x-5+x^2}	<code>E^(x-5+x^2)</code> or <code>Exp[x-5+x^2]</code> (or use Basic Math Assistant)
FUNCTIONS	$f(x + 3)$ (if f is a function)	<code>f[x+3]</code>
	$xf(2x) - x^2f(x)$	<code>x f[2x] - x^2 f[x]</code> (spaces important)
	$(f \circ g)(x)$	<code>f[g[x]]</code>
	$(f + g)(x)$	<code>f[x] + g[x]</code>
	$f^2(x)$	<code>(f[x])^2</code> (or just <code>f[x]^2</code>)
CALCULUS	$\lim_{x \rightarrow 4} f(x)$	<code>Limit[f[x], x -> 4]</code>
	$f'(3)$	<code>f'[3]</code>
	$h'(x)$	<code>D[h[x], x]</code>
	$\frac{d}{dx}(\cos x)$	<code>D[Cos[x],x]</code>
	$g'''(x)$	<code>g''[x]</code> or <code>D[g[x],{x,3}]</code>
	$\int x^2 dx$	<code>Integrate[x^2,x]</code> (or use Basic Math Assistant) Note: answer will be missing the "+C"
	$\int_2^5 \cos x dx$	For an exact answer: <code>Integrate[Cos[x], {x, 2, 5}]</code> (or use Basic Math Assistant) For a decimal approximation: <code>NIntegrate[Cos[x], {x, 2, 5}]</code>
	$\sum_{k=1}^{12} f(k)$	<code>Sum[f[k], {k, 1, 12}]</code> (or use Basic Math Assistant)

	TASK	MATHEMATICA SYNTAX
GENERAL STUFF	To call the preceding output	%
	To get a decimal approximation to the preceding output	N[%] (or click numerical value)
	To factor an expression	Factor[]
	To multiply out an expression (i.e. FOIL an expression)	Expand[]
	Partial fraction decomposition	Apart[]
	To combine rational terms (i.e. "undo" partial fraction decomposition)	Together[]
	To simplify an answer	Simplify[]
FUNCTIONS AND GRAPHS	Define a function $f(x) = formula$	f[x_] = formula (one equals sign, underscore after x)
	Generate table of values for f	Table[{x,f[x]}, {x, xmin, xmax}] (put //TableForm after this command to format the output in a table)
	Plot the graph of $f(x) = formula$	Plot[formula, {x, xmin, xmax}]
	Plot multiple graphs at once	Plot[{formula, formula, ..., formula}, {x,xmin,xmax}]
	Plot the graph of $f(x) = formula$ with range of y -values specified	Plot[formula, {x, xmin, xmax}, PlotRange -> {ymin, ymax}]
	Plot the graph of $f(x) = formula$ with x - and y -axes on same scale	Plot[formula, {x,xmin, xmax}, PlotRange -> {ymin, ymax}, AspectRatio -> Automatic]
	Plot the graph of $f(x) = formula$ with a red, dashed curve	Plot[formula, {x,xmin, xmax}, PlotStyle -> {Red, Dashed}] (other examples of this can be found in the Plots and Calculus file on my website)
SOLVING EQUATIONS	Find exact solution(s) to equation of form $lhs = rhs$	Solve[lhs==rhs,x] (two equals signs) (works only with polynomials or other relatively "easy" equations)
	Find decimal approx. to solutions of equation $lhs = rhs$	NSolve[lhs==rhs,x] (two equals signs) (works only with "easy" equations)
	Find decimal approx. to solutions of equation $lhs = rhs$	FindRoot[lhs==rhs,x,guess] (two equals signs)
	Solve two (or more) equations together like $\begin{cases} lhs_1 = rhs_1 \\ lhs_2 = rhs_2 \end{cases}$	Solve[{lhs1==rhs1, lhs2==rhs2}, {x,y}]